PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 4 :		(11) International Publication Number:
A63C 9/20, 9/086	A1	WO 87/ 01296
		(43) International Publication Date: 12 March 1987 (12.03.87)

(21) International Application Number: PCT/IT86/00068

(22) International Filing Date: 5 September 1986 (05.09.86)

(31) Priority Application Number: 22073 A/85

(32) Priority Date: 6 September 1985 (06.09.85)

(33) Priority Country: IT

(71) Applicant: LAF DI LAFRANCONI ANDREA [IT/IT]; Via Maggiana, 22/B, I-22054 Mandello del Lario (IT).

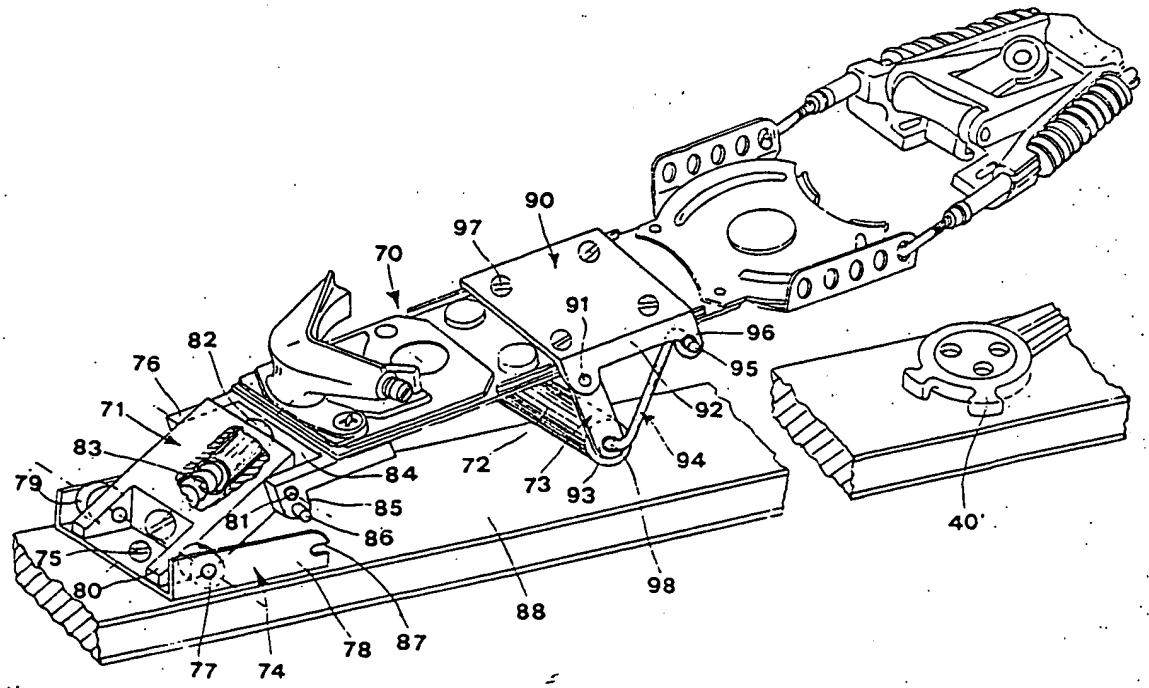
(72) Inventor: LAFRANCONI, Andrea ; Via Maggiana, 22/B, I-22054 Mandello del Lario (IT).

(74) Agent: DI GIOVANNI, Italo; Ufficio Brevetti Dott. Ing. Digiovanni Schmiedt, Via Aldrovandi, 5, I-20129 Milano (IT).

(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), SE (European patent).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: SKI BINDING FOR ALPINE CROSS-COUNTRY SKIING WITH PHYSIOLOGICAL ARTICULATION



(57) Abstract

Binding (70) for alpine cross-country skiing oscillating on the ski (88) by means of a thin transversal spacer set at a distance from the toe of the boot (47) practically corresponding to the zone of physiological articulation of the phalanges and metatarsus of the foot to obtain maximum thrust by the foot during uphill movement it being possible to tilt over the spacer (73) to enable the binding (70) to adhere closely to the ski (88) for the downhill run.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	**GA**	Gabon	**MR**	Mauritania
AU	Australia	**GB**	United Kingdom	**MW**	Malawi
BB	Barbados	**HU**	Hungary	**NL**	Netherlands
BE	Belgium	**IT**	Italy	**NO**	Norway
BG	Bulgaria	**JP**	Japan	**RO**	Romania
BR	Brazil	**KP**	Democratic People's Republic of Korea	**SD**	Sudan
CF	Central African Republic			**SE**	Sweden
CG	Congo	**KR**	Republic of Korea	**SN**	Senegal
CH	Switzerland	**LI**	Liechtenstein	**SU**	Soviet Union
CM	Cameroon	**LK**	Sri Lanka	**TD**	Chad
DE	Germany, Federal Republic of	**LU**	Luxembourg	**TG**	Togo
DK	Denmark	**MC**	Monaco	**US**	United States of America
FI	Finland	**MG**	Madagascar		
FR	France	**ML**	Mali		

Title::

"SKI BINDING FOR ALPINE CROSS-COUNTRY SKIING WITH PHYSIOLOGICAL ARTICULATION"

Present state of the art

As is well known, the human walking movement consists of putting one foot forward and by bending the hind foot, in the articulation between the metatarsus and phalanges, and pressing on the ground with roughly the front third of the foot, allowing the back of the foot to remain raised so as to permit the body to move forward.

Skiing boots, with their more or less rigid soles, hinder or impede this physiological bending of the foot.

In what is called "alpine cross-country skiing", moving upwards on a slope the step is taken with articulation between boot and ski at a point even further forward than the toe of the boot itself, increasing effort and fatigue and making it impossible to use full muscular power.

The invention concerned eliminates the above drawbacks, offering important advantages as will be described below.

Description of the invention

Subject of the invention is a binding for alpine cross-country skiing comprising a thin transversal spacer placed, almost perpendicularly, between binding and ski to allow oscillation of said binding at a distance from the toe of the boot practically corresponding to the phalange-metatarsus area of physiological articulation of the foot and, in this way, achieve maximum thrust for the next upward step.

Said spacer can be tilted up and down on its own hinge as desired to allow the binding and the ski to lie closely together for downward runs.

The binding is connected to the ski by means of a flat, longitudinal spacer whose external front end is articulated on the front hinge of said binding, while its internal back end articulates on a hinge placed at the summit of the transversal spacer. This latter articulates on a second hinge, parallel to the first one, mounted on the ski.

When an upward step is being taken the position of the forward boot, practically parallel to the ski, is assured by a flexible stay coupled at one end to the front tip of the binding and, at the other end, to a support fixed towards the front of the ski.

In a second type of execution the binding is connected to the ski by means of a flat flexible longitudinal stay made of metal or other material, underneath the binding and passing above the transversal spacer, whose external front end articulates on the front hinge of said binding while the back end is fixed to the ski behind said transversal spacer. In the position for the downward run its alignment with the ski is assured both by a hook fixed to the front of the ski, into the groove of which the front end of the binding fits, and by a locking means at the back, such as one of the known types.

In a third type of execution the binding is connected

by means of a front connecting rod to a support mounted on the ski.

This connecting rod is prevented from assuming an angle greater than that corresponding to maximum backwards oscillation of the binding, practically coinciding with the binding's parallel alignment to the ski.

For this purpose, close to said connecting rod's lower articulation, small arms or stroke-end stops are fixed to it which make contact with its support and therefore with the ski itself. An elastic means interposed between the connecting rod and the binding tends to lessen the internal angle between said parts and therefore, due to the reaction of the connecting rod arms which make contact with the ski, after each forward oscillation when an upward step is taken, the binding tends to be brought back to a position parallel to the ski.

The connecting rod articulates internally by means of a fork mounted at the tip of the binding.

Its downward run position, in line with the ski, is obtained by means of lateral pins, or the like, mounted on the fork, parallel to the articulation, at a short distance from the fork towards the inside of the binding, and by means of small teeth, or the like, fixed to the ski in a position a short distance from said pins, when the connecting rod is made to align itself with the ski keeping the binding practically perpendicular to said ski.

Therefore by turning the binding round from said perpendicular position until it is aligned with the ski, the pins, translating round the axis of articulation of the connecting rod, place themselves under the teeth thus locking the binding at the front, while other even well known means, lock it at the back.

The transversal spacer articulates on a support mounted on the binding by screws or other means, and has at its extremity a roller, freely moving on a transversal axis,

which constitutes the fulcrum point of binding oscillation.

Said roller permits translation, caused by the force component, practically parallel to the ski, of the end of the connecting rod articulated onto the binding.

The longitudinal position on said binding of the support with roller, can be adjusted to suit the size of the wearer's foot by moving the locking screws to other holes or by other means of adjustment.

In a fourth type of execution the transversal spacer articulates on a support mounted on the ski and, like the extremity, it also has a freely moving roller on a transversal axis, which constitutes the fulcrum point of the binding's oscillation.

When proceeding upwards, the transversal spacer is preferably fixed in the perpendicular position between the binding and the ski, by means of an elastic fork whose central straight section forms the pin of the hinge fitted on the extremity of the spacer itself.

The two ends of said fork are bent outwards and aligned so that they can be pressed into two aligned eyelets in a strap fixed to the ski or to a supporting means fixed to the binding.

By detaching said ends of the fork from the eyelets, the spacer can then be tilted to the downward run position.

The central section of the fork can be used as a pin for the rollers included in the two last executions.

The characteristics and purposes of the invention will be made even clearer by the following examples of its execution illustrated by drawings.

Examples of execution

Fig.1 Side view of a boot fitted to the ski with usual bindings with the back foot making an upward step.

Fig.2 View of the ski binding, subject of the invention, showing the longitudinal spacer.

Fig.3 Ditto as above in the downward run position.

Fig.4 Side view of a boot fitted to the ski with the invented binding while the back foot is making an upward step.

Fig.5 Ditto as above while the front foot is making an upward step.

Fig.6 Ditto as above in the downward run position.

Fig.7 View of the ski binding, subject of the invention, showing the longitudinal flexible stay.

Fig.8 View of the ski binding, subject of the invention, showing the front connecting piece.

Fig.9 Ditto as above in the downward run position.

Fig. 1 shows diagrammatically the mean position of the geometrical axis (51) of rotation of a boot (52) with the hind foot taking an upward step, when an ordinary binding (50) is mounted on the ski (54) by means of the strap(53).

Said axis (51) is far (distance D) from the mean axis (55) of the zone corresponding to physiological articulation between phalanges and metatarsus.

Fig. 2 shows a binding (10) which, according to the present invention, has a front hinge (11) fixed by means of the strap (12) and screws (19) to the front end (32) of the longitudinal spacer (14).

The transversal spacer (16) is connected at its summit, by means of the hinge (18) with the longitudinal spacer (14) and, below, by means of the hinge (17) to the strap (15) mounted on the ski (13) with screws (20).

The pin for the hinge (18) consists of the central straight section (22) of the elastic fork (21) whose aligned ends (23) (24) bent outwards, fit into the eyelets (25) (26) of the strap (27) mounted by screws (28) on the ski.

To the front of the binding (10), the hook (30) with a tongue (31) and groove (48) facing inwards, is fixed to the ski by the screws (29).

The locking device (40) is fixed at the back to the ski.

At the front the double flexible stay (42) connects the binding, by means of the screw (43), to the angular support (44) fixed to the ski by means of the screw (45).

Operation

As can be clearly seen in Fig. 4, the articulation of the back boot taking an upward step in relation to the ski, takes place, with the invented binding, on the geometrical axis (46) at a point practically on the physiological articulation between phalanges and metatarsus.

Obviously the angle made by the boot can be completed on the front hinge (11) as with ordinary bindings.

The position of the front boot (48), seen in Fig. 5, is however substantially parallel to the ski (49) due to the effect of the stay (42) which reacts to the weight of the skier.

When going downhill the binding (10) lies close to the ski (13) detaching the fork (21) from the eyelets (25) (26), tilting the spacer (16) onto the ski and inserting the extremity (32) of said binding in the groove (48) of the hook (30) as appears in Figures 3 and 6.

This position is kept stable by means of the locking device (40) for downhill runs.

Second type of execution

Fig. 7 illustrates a variation consisting in use of the flexible stay (57).

This stay, made of metal or some other material, is held at its front end (62) to the strap (12) by means of the screws (58) and, curving round (63), passes over the spacer (59) connected, by means of the upper hinge (60), to the central section (22) of the fork (21) and is then fixed underneath the plate (61) by the eyelets (55) (56) for holding the fork to the ski (13').

The spacer articulates on the hinge (17').

Operation is practically identical to that with the longitudinal spacer (14).

Third type of execution

Figures 8 and 9 show a variation consisting in oscillation

by the binding (70) on the ski (88) being guided by means of the front connecting piece (71) and the roller (72) supported by the transverse spacer (73).

Front articulation (77) of the connecting piece is made by means of the small pins with spacers (79) anchored to the sides (78) of the C-shaped support (74) fixed to the ski with screws (75).

Rotation of the connecting piece is limited by the end-stroke stops (80).

Back articulation (81) takes place by means of the small pins anchored in the fork (76) mounted at the tip of the binding (70).

A small piston (82), placed longitudinally in the connecting section, is pressed by the compression spring (83) against the front (84) of the fork (76).

This fork has short arms (85) at 90° turned inwards and supporting the aligned pins (86), but out of line with the axis of articulation (81).

The inner ends of the sides of support (74) are cut in to form the teeth (87).

The distance between the extremity of said teeth and the front articulation is greater than the centre distance between said front articulation and the back articulation of said connecting section, but lesser than said centre distance increased by the misalignment of the pins (86).

Therefore, turning the binding towards the ski, having first placed it practically perpendicular to the latter, it becomes possible to make the pins (86) go beyond the end of the teeth (87) and insert them under said teeth as seen in Fig. 9 in order to lock the position of the connecting piece and the end of the binding against the ski in preparation for the downhill run.

The spacer (73) is mounted on the binding (70) by means of the C-shaped support (90), with articulation (91) on the small pins anchored to the sides (92).

At the lower end the spacer (73) supports, by means of

the eyelets (93) the central section (98) of the elastic fork (94), structure and operation of which are substantially the same as those of the fork (21) in Figs. 2 and 3, and on which the roller (72) is fitted.

The ends (95) of said fork, inserted in the eyelets (96) of the sides (92), hold the spacer in the position shown in Fig. 8, practically perpendicular to the binding.

The screws (97) can be screwed into any one of a series of holes in the binding aligned longitudinally, to allow the position of the spacer on the binding to be adjusted and consequently adjustment of the fulcrum point of oscillation on the ski (88) according to the size of the skier's foot.

Operation

Operation is practically the same as described above for the other types.

When an uphill step is taken the binding oscillates by means of the roller (72) on the ski practically at the position of articulation between phalanges and metatarsus as happens with the bindings in Figs. 4 and 5.

Oscillation however is guided by the connecting piece (71) which causes the binding to make a slight longitudinal translation on the above-mentioned roller.

The end-stroke stops (80), making contact with the support (74) and therefore with the ski, prevent the binding from exceeding in its backward movement, the parallel position in relation to the ski, corresponding to Fig. 5.

For the downhill position (Fig. 9) all that is necessary is for the elastic fork to be detached from the eyelets in order to allow the spacer to be tilted parallel to the binding and to the ski.

At the same time the connecting piece (71) is locked against its support thus pressing the pins (86) underneath the teeth (87) as already described. Pressed by the spring (83) the piston (82) tends, after each oscillation in the uphill step, to return the binding parallel

to the ski partly due to the reaction of the end-stroke stops (8C) on the connecting piece against the ski.

Advantages

With the ordinary types of bindings, articulation of which during an uphill step is even further forward than the tip of the boot, maximum thrust is exerted practically on the toes only.

With the bindings subject of this invention, articulation between the boot and the ski occurs practically in the zone corresponding to the physiological articulation betwen phalanges and metatarsus and, with the foot back when taking an uphill step, the maximum thrust for forward movement can be obtained.

This thrust is considerably greater, even more than 30%, than that obtainable with ordinary bindings.

Effort is thus proportionately less while performance and muscular efficiency are much greater.

The easy change-over from the "climbing" position to the "downward run" position is a further interesting and extremely useful advantage offered by this present invention.

As the applications of the invention have been described as examples only and not limited to these, it is understood that any equivalent application of the inventive concepts described and any product executed and/or in operation in accordance with the characteristics of the invention, will be covered by its field of protection.

CLAIMS

1. Binding (10), (10'), (70) for alpine cross-country skiing characterized in that it comprises a thin transversal spacer (16), (59), (73) placed almost perpendicularly between binding (10),(10') (70) and ski (13), (13') (49),(88) allowing the binding (10), (10'), (70) to oscillate at a distance from the toe of the boot (47), (48) practically corresponding to the zone of physiological articulation between the phalanges and the metatarsus of the foot, for maximum thrust by the foot taking an upward step, said spacer (16), (59), (73) being tiltable at will round a hinge (17), (17'), (91) to allow the binding (10), (10'), (70) to lie flat on the ski (13), (49),(13') during the downhill run.

2. Binding (10), (10'), (70) for alpine cross-country skiing as in claim 1, characterized in that it is connected to the ski by a longitudinal flat spacer (14) underneath the binder (10), whose external front extremity (32) articulates on the front hinge (11) of the binding (10), while its internal back extremity articulates on a hinge (18) placed at the summit of the transversal spacer (16) articulated below on a second hinge (17) parallel to the first one (18) fixed to the ski (13), (49).

3. Binding (10), (10'), (70) for alpine cross-country skiing as in claim 1, characterized in that, during the uphill step, the position of the front boot (47), (48), practically parallel to the ski, is assured by a flexible stay (42) hooked to one end of the binding (10), (10'),at a point corresponding to its front tip and, at the other end, to a support (44) fixed to the front of the ski (13), (13'), (49).

4. Binding (10), (10'), (70) for alpine cross-country skiing as in claim 1, characterized in that it is connected to the ski (13') by a longitudinal flat flexible stay(57) made of metal or some other material under the binding(10')

passing above the transverse spacer (59) articulated below on a hinge (17') mounted on the ski (13'), the front external end (62) of the stay (57) being articulated on the front hinge (11) of the binding (10') while its front end is fixed to the ski (13') at a point situated beyond the spacer (59).

5. Binding (10), (10'), (70) for alpine cross-country skiing as in claim 1, characterized in that its close adherence to the ski (13), (13') in the downhill position is ensured both by a hook (30) fixed on the front of the ski (13), (49), (13') in the groove of which hook(48) the front end of the binding (10) (10') goes to fit in, or by means (32), (62) fixed to it, and by a locking means (40), (40') at the back which may be of a known type.

6. Binding (10), (10'), (70) for alpine cross-country skiing as in claim 1, characterized in that a front contact piece (71) connects said binding to a support (74) mounted on the ski (88), said contact piece (71) being prevented from assuming an angular position greater than that corresponding to the maximum backwards oscillation of the binding (70)practically coinciding with the parallel position of the binding to the ski (88), by means of end-stroke stops (80) placed close to its front articulation (77) and which make contact with its support (74) and therefore with the ski (88) itself.

7. Binding (10), (10'), (70) for alpine cross-country skiing, as in claim 6, characterized in that an elastic means (83) between the contact piece (71) and the binding (70) tends to reduce the internal angle between them and thus, due to the reaction by the end-stroke stops (80) on the ski (88) tends to bring back the binding (70), after each forward oscillation made during an uphill step, to a position parallel with the ski (88) or at any rate to cause it to oscillate backwards.

8. Binding (10), (10'), (70) for alpine cross-country skiing, as in claim 6, characterized in that the internal

articulation(81) of connecting piece (71) is made by means of a fork (76)mounted on the tip of the binding (70) whose downhill position, when it lies flat on the ski (88), is secured by lateral pins (86), or the like, mounted on the fork (76), parallel to the articulation (81) at a short distance from the same towards the inside of the binding (70), and by teeth (87),or similar means,fixed to the ski (88) in such a position that, when the contact piece (71) is made to adhere closely to the ski (88) keeping the binding (70) practically perpendicular to said ski, at a short distance from the pins (86), by turning the binding (70) from said perpendicular position until it is close against the ski (88),said pins (86),translating around the axis of articulation (77) of the contact piece (71),assume a position under the teeth (87) thus locking the binding (70) at the front while other means (40'), even those already known, lock it in place at the back.

9. Binding (10), (10'), (70) for alpine cross-country skiing as in claim 1, characterized in that the transversal spacer (73) articulates by a hinge (91) on a support (90) mounted on the binding (70) with screws (97) or by other means, having at its end a roller (72) freely turning on a pin (98) transversal to the ski (88) that constitutes the fulcrum point of oscillation by the binding (70),the longitudinal position of the support (90) with roller(72) being adjustable on said binding to suit the size of the skier's foot, by moving the locking screws (97) into other holes made in the binding (70) or by other means.

10. Binding (10), (10'), (70) for alpine cross - country skiing as in claim 1, characterized in that the transversal spacer articulates on a support mounted on the ski by screws or other means and has at its extremity a roller turning freely on a pin transversal to the ski that constitutes the fulcrum point of binding oscillation.

11. Binding (10), (10'),(70), for alpine cross-country skiing as in claim 1, characterized in that during uphill

movement the transverse spacer (16), (59), (73) is held perpendicularly between the binding (10), (10'), (70) and the ski (13), (49),(13'), (88) by means of an elastic fork (21), (94) whose straight central section (22),(98) forms the pin of a hinge (18), (60), mounted on the end of the spacer (16), (59), (73) while the ends (23),(24), (95) of said fork (22), (94) are bent outwards and aligned to allow them to be pressed elastically inside two aligned eyelets (25), (26), (55), (56) fixed to a strap (27),(61) mounted on the ski (13) (13') or inside eyelets (96) made in a support (90) fixed to the binding (70), it being possible, by detaching the extremeties (23), (24), (95) of the fork (22), (94) from the eyelets (25), (26),(55), (56), (96), to tilt over the spacer (16), (59), (73) for the downhill position, the central section (98) of the fork (94) being utilizable as a pin for the roller (72) acting as a fulcrum for binding (70) oscillation.

fig. 1

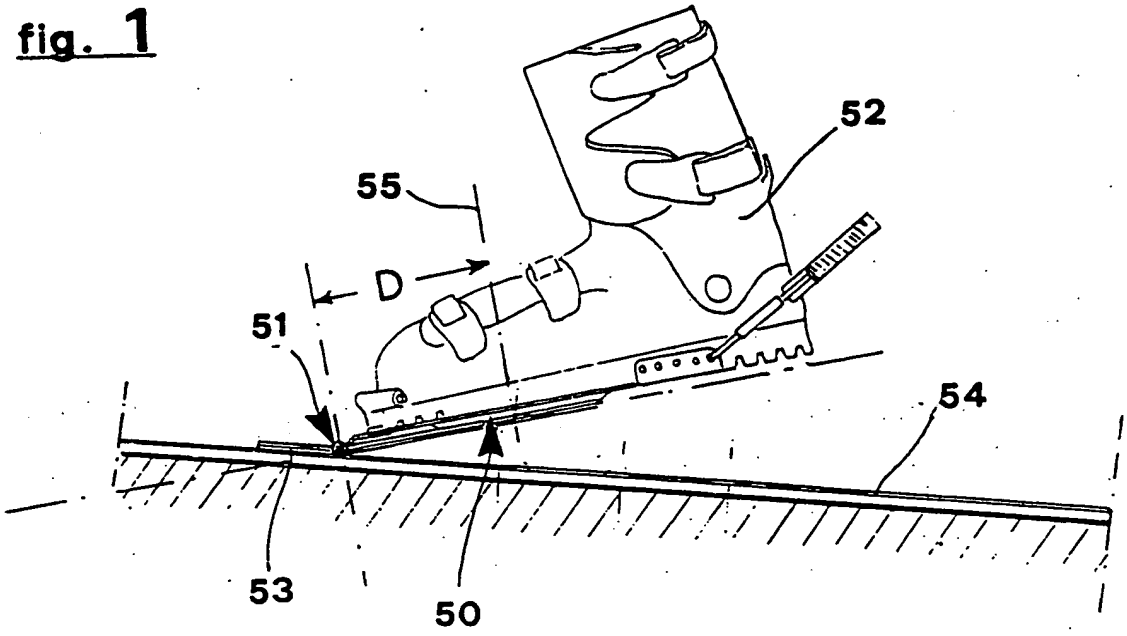
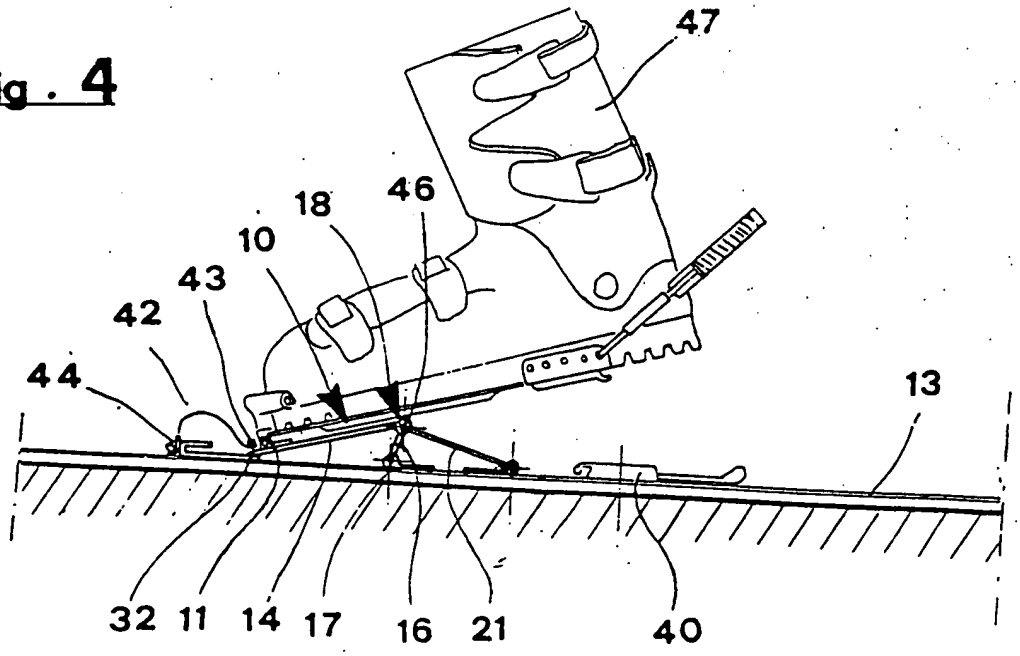


fig. 4



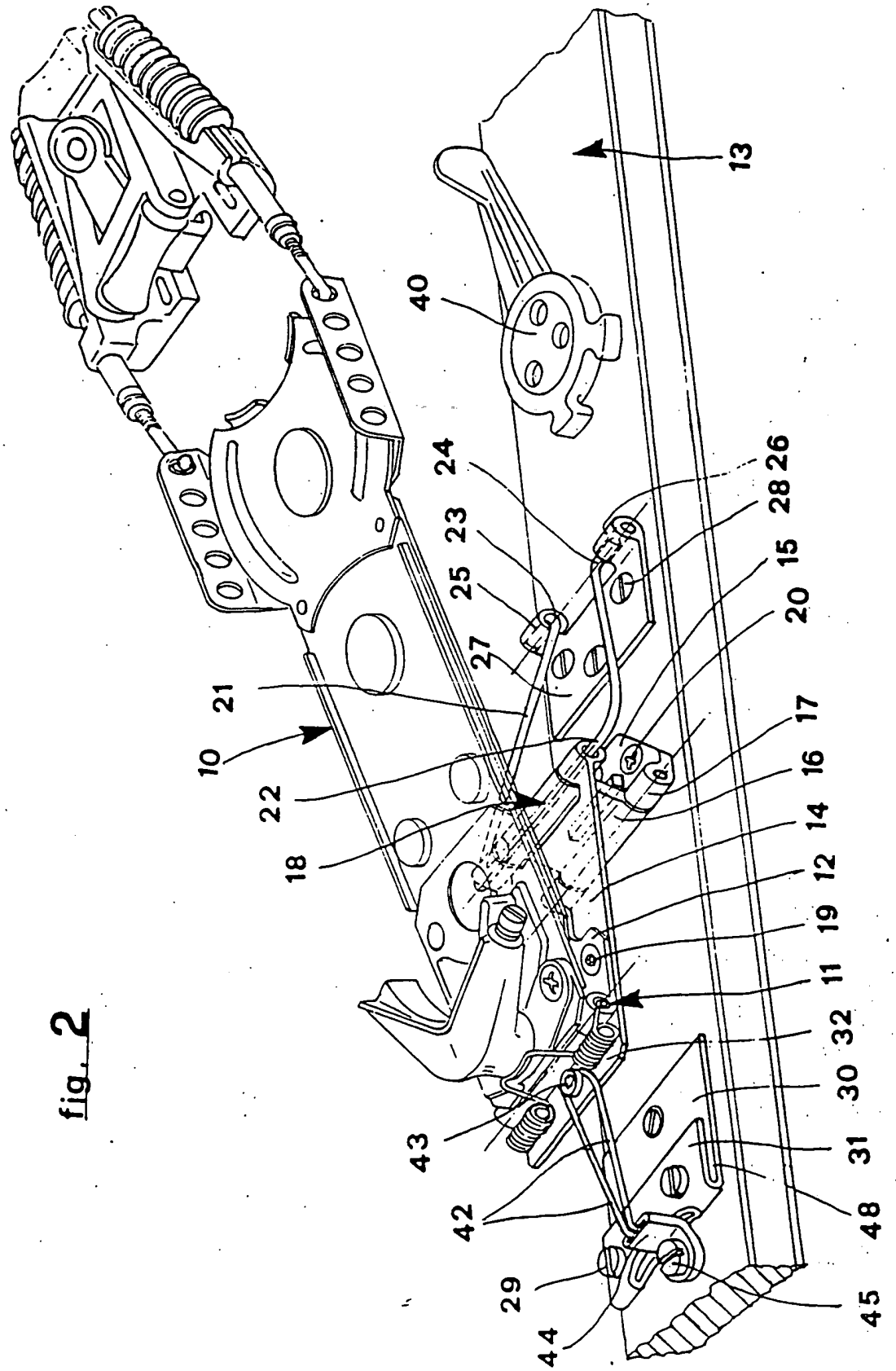

13
40
24
26
28
23
25
15
20
27
21
17
10
16
22
14
18
12
19
11
32
30
43
31
42
48
29
45
44

fig. 2

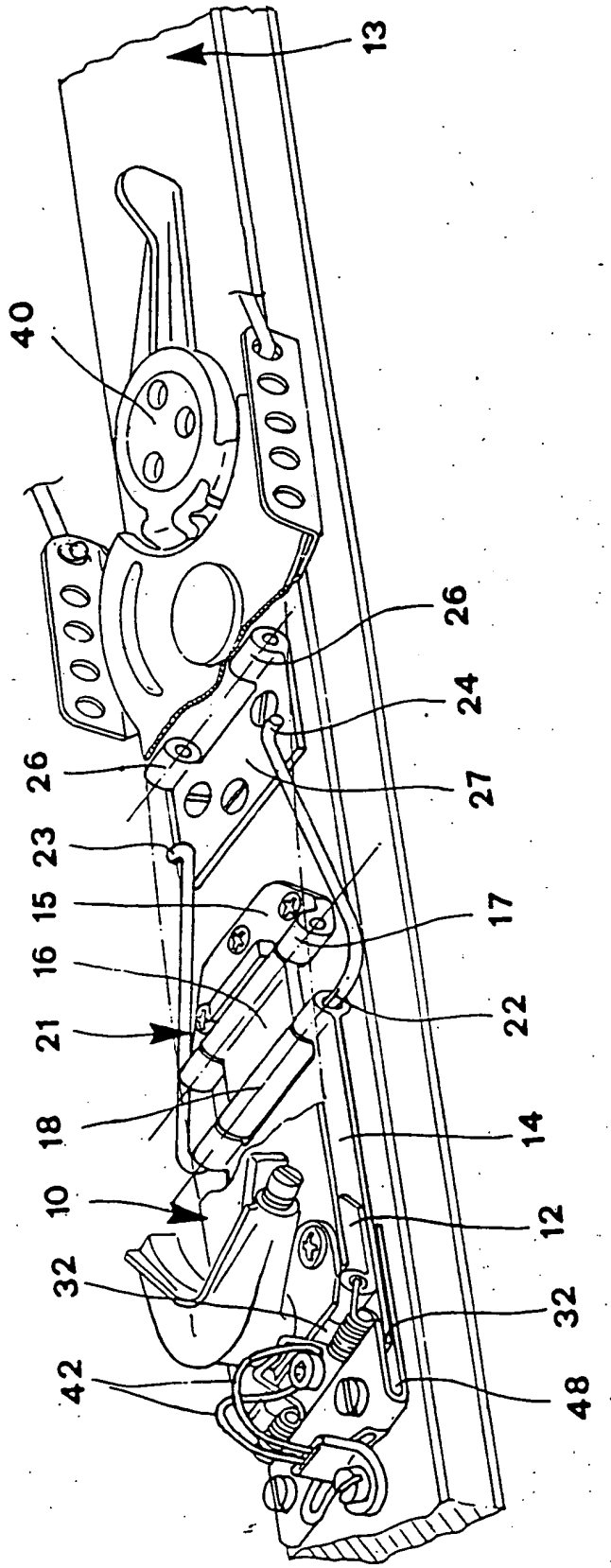


fig.3

fig. 5

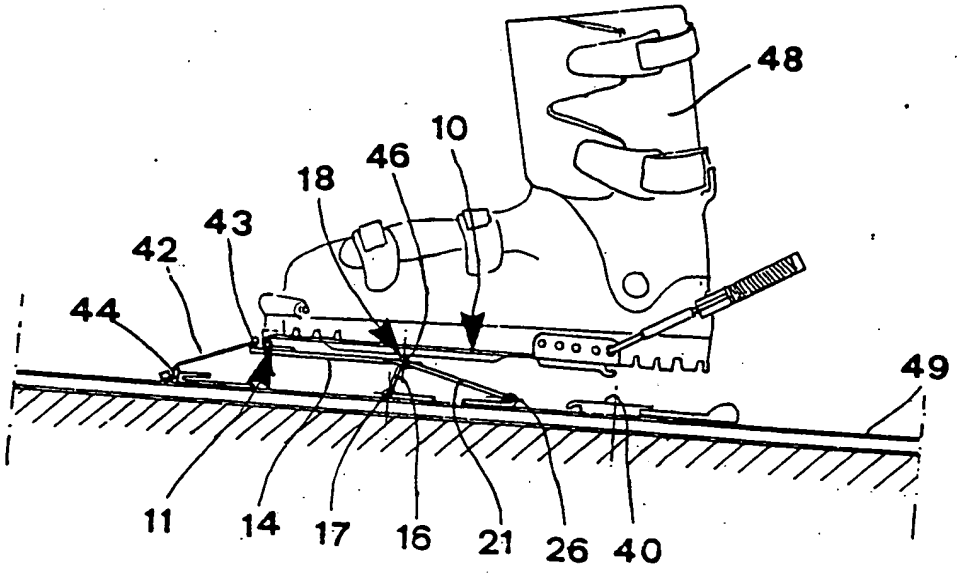
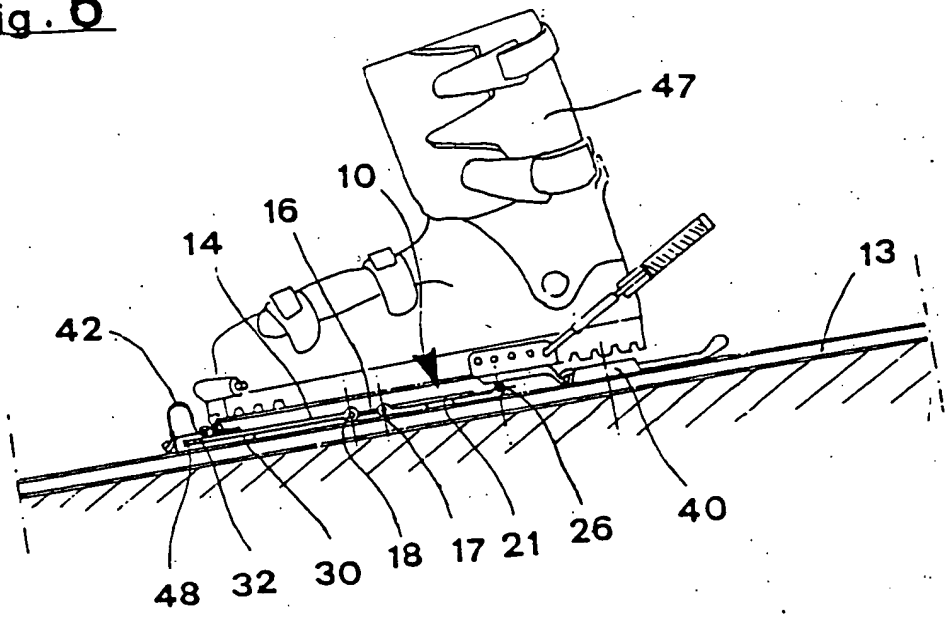

48
10
46
18
43
42
44
49
11
14
17
16
21
26
40

fig. 6


47
10
16
14
13
42
48
32
30
18
17
21
26
40

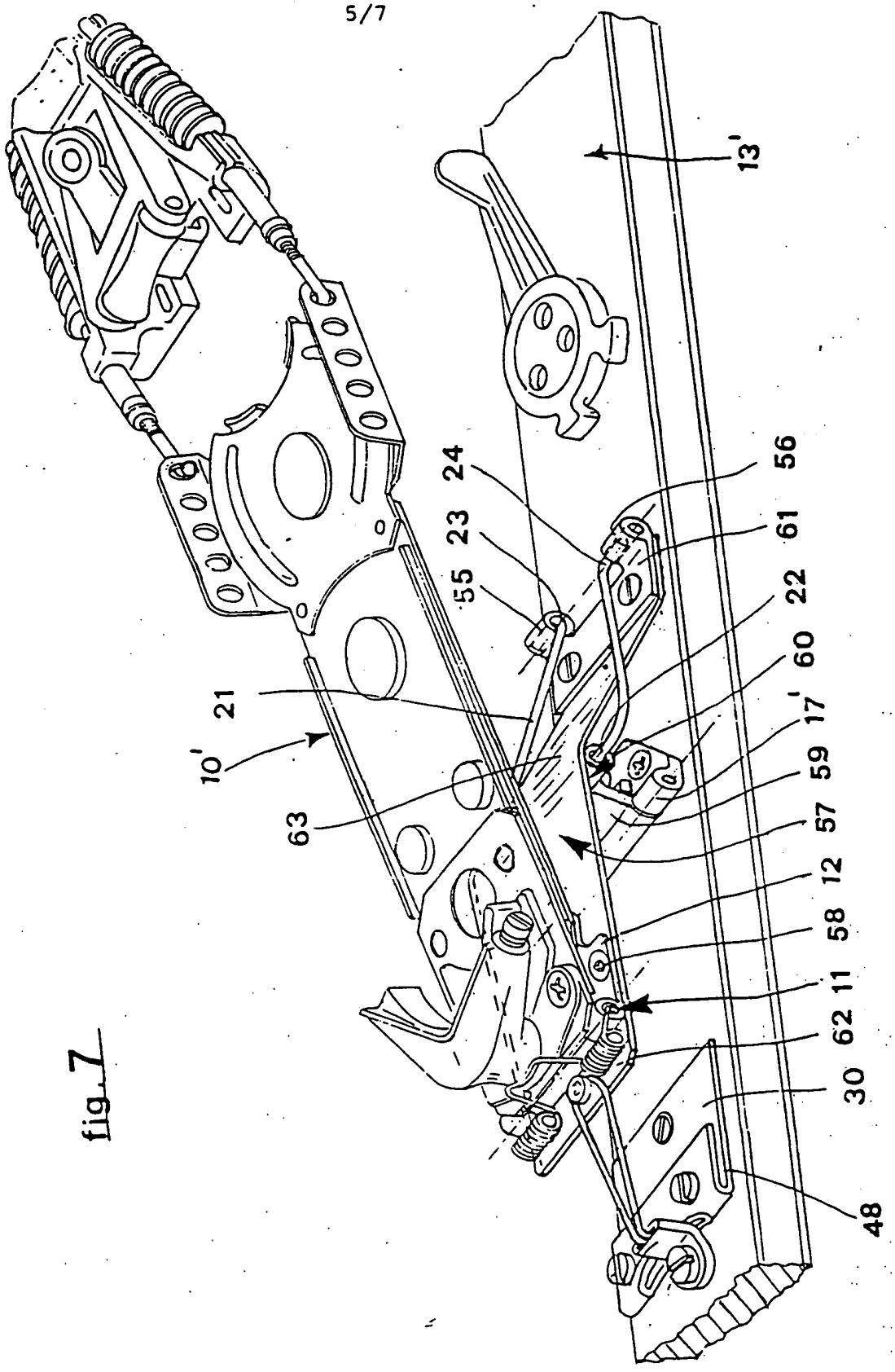


fig. 7

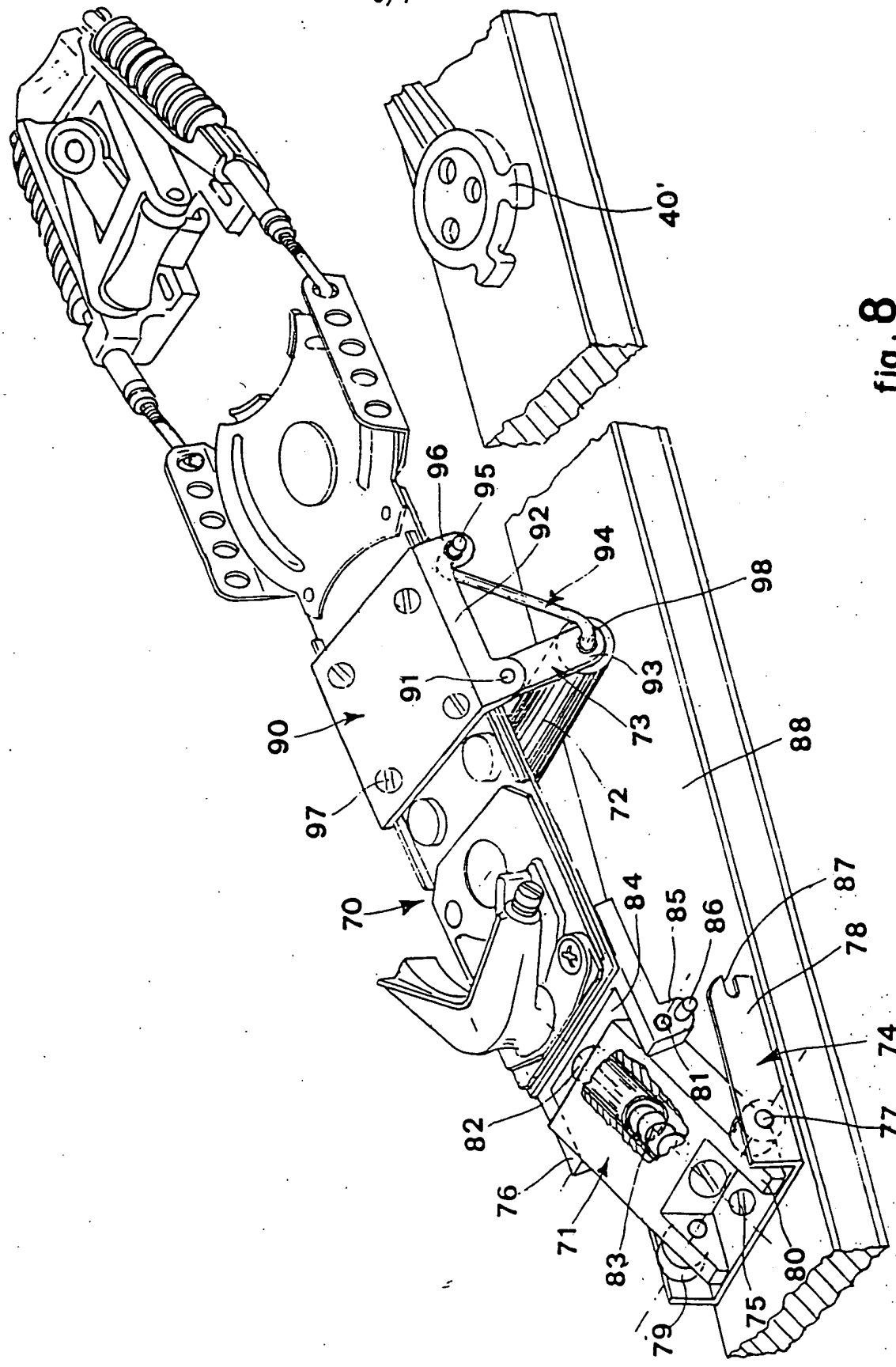

40'
96
95
92
94
98
91
93
90
73
88
97
72
70
84
85
86
87
78
74
81
77
82
76
71
83
80
79
75

fig. 8

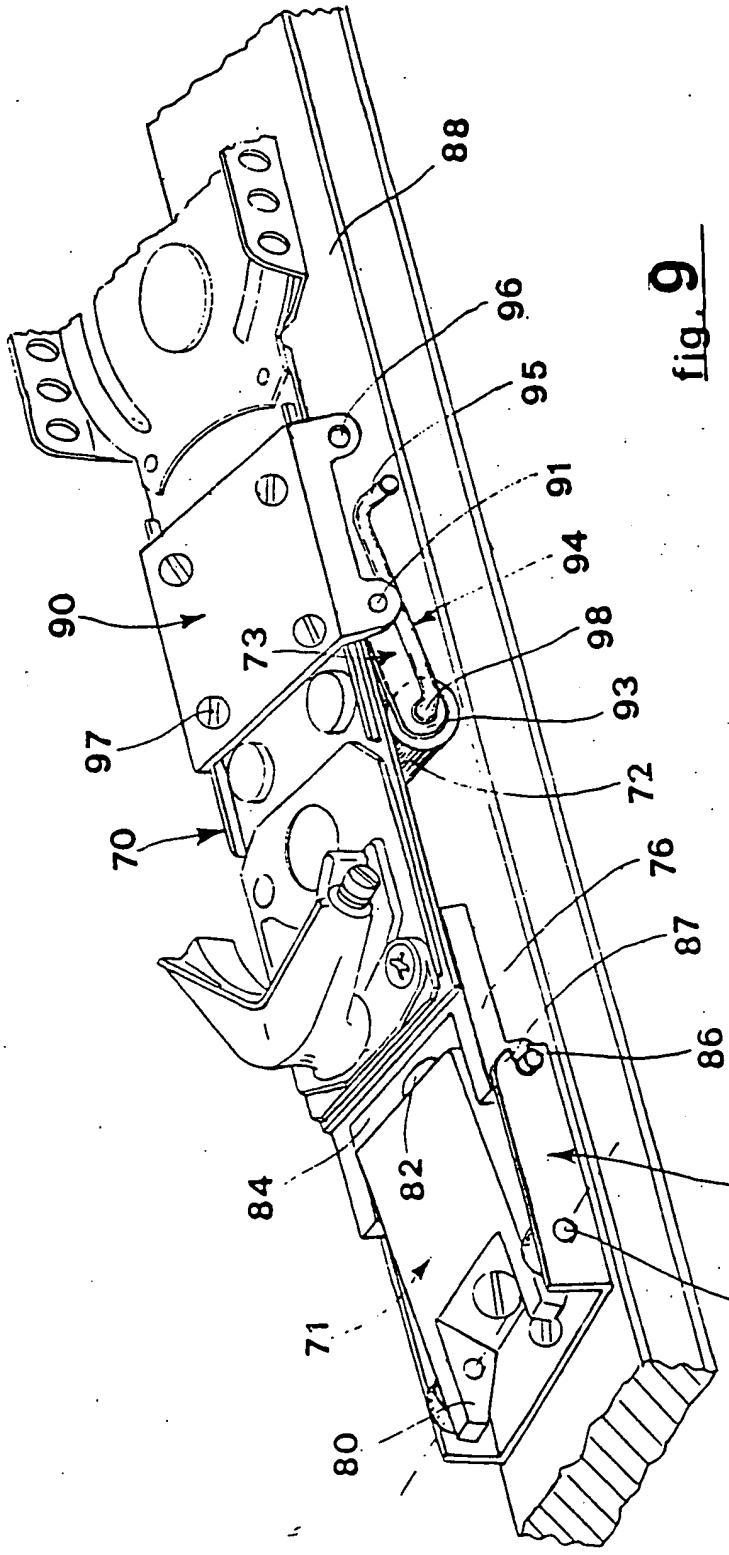


fig. 9

INTERNATIONAL SEARCH REPORT

International Application No PCT/IT 86/00068

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[4]: A 63 C 9/20; A 63 C 9/086

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[4]	A 63 C

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category [9]	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
Y	FR, A, 2302116 (RAMER) 24 September 1976 see page 9, line 13 - page 10, line 28; figures	1-5
A		6,8
	--	
Y	US, A, 4410199 (EISENBERG) 18 October 1983 see column 2, line 49 - column 4, line 9; figures	1-5
A		8-10
	--	
A	US, A, 4221401 (STÖLZLE) 9 September 1980 see the abstract; figures	1,2,10
	--	
A	FR, A, 2490099 (HEINZ) 19 March 1982	
	--	
A	FR, A, 2397207 (MARKER) 9 February 1979	
	--	
A	FR, A, 2275231 (BLOT) 16 January 1976	

---

* Special categories of cited documents: [10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
10th December 1986	28 JAN 1987
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	M. VAN MOL

Form PCT/ISA/210 (second sheet) (January 1985)

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/IT 86/00068 (SA 14445)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 14/01/87

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
FR-A- 2302116	24/09/76	US-A-	4002354	11/01/77
		CH-A-	600909	30/06/78
		DE-A,C	2607270	28/04/77
		AT-B-	347306	27/12/78
		JP-A-	51134235	20/11/7
		CA-A-	1065360	30/10/79
		CA-A-	1075734	15/04/80
		AT-B-	359897	10/12/80
		JP-A-	52051231	25/04/77
		DE-C-	2660307	17/10/85
US-A- 4410199	18/10/83	None		
US-A- 4221401	09/09/80	None		
FR-A- 2490099	19/03/82	DE-A,C	3131384	13/05/82
		AT-A,B	368901	25/11/82
		AT-A,B	371351	27/06/83
		AT-A,B	371735	25/07/83
		DE-U-	8123281	29/08/85
FR-A- 2397207	09/02/79	DE-A-	2731897	01/02/79
		JP-A-	54019833	14/02/79
		US-A-	4188045	12/02/8
		AT-B-	357918	11/08/80
FR-A- 2275231	16/01/76	None		

For more details about this annex :
see Official Journal of the European Patent Office, No. 12/82